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(54) Mousetrap

(57) A mousetrap comprising a tubular trap body (1) constituted to be folded into an generally flat configuration, elastic members (2) for applying elastic force to fold the trap body into the flat configuration and a trapping mechanism (3) for maintaining the trap body (1) under trapping tubular condition against the elastic force of the elastic members (2), the trap body (1) being operated to be folded into the flat configuration by releasing the trapping mechanism (3). The trap body (1) is formed into an approximately equilateral or isosceles triangular tube, one (1a) of side surfaces of the equilateral triangular tube or one side surface except for two equilateral ones of isosceles triangular tube being formed with a fold (14) approximately bisecting the side surface (1a) axially to be operatively folded between the other two surfaces about the fold (14).

FIG. 1

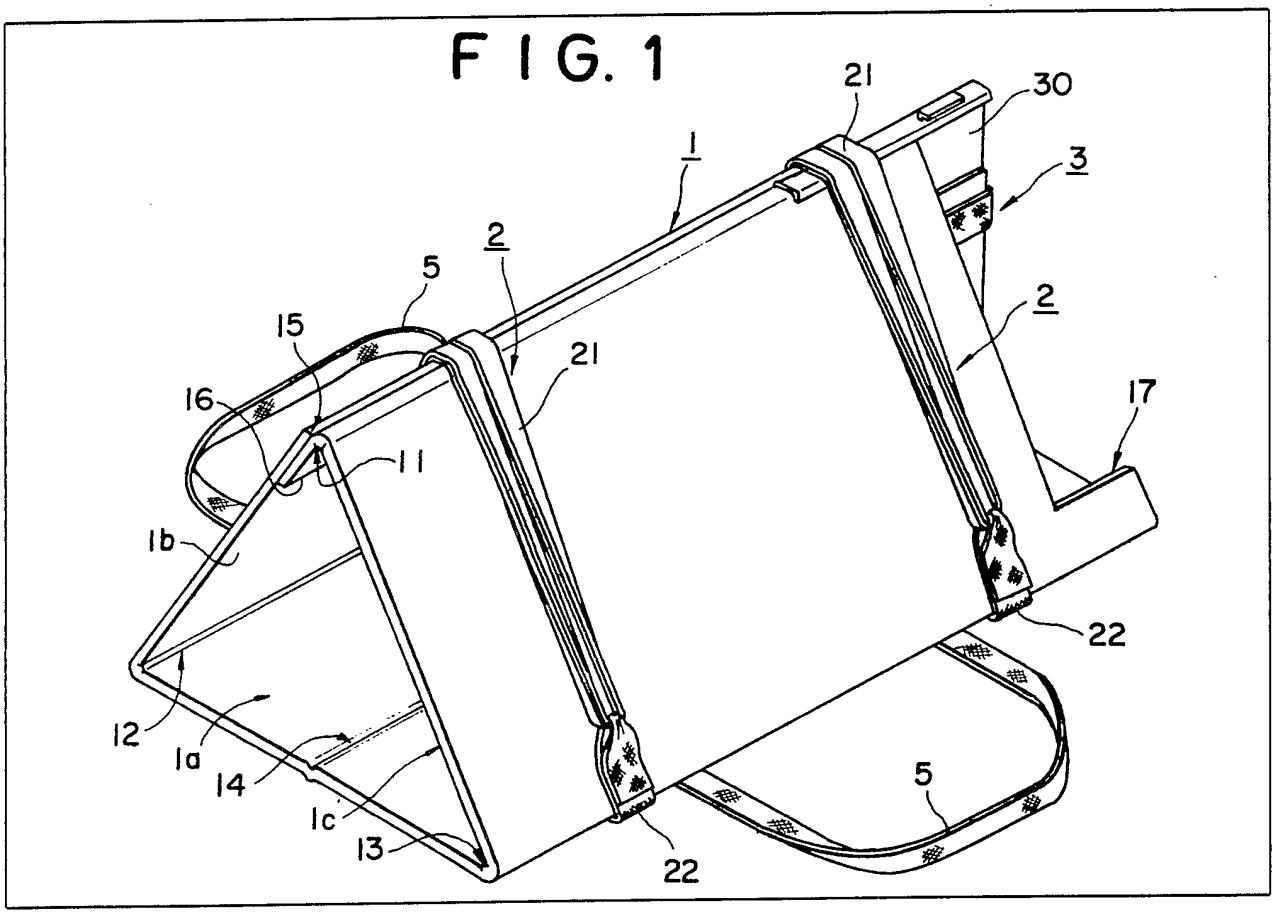

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FIG. 1

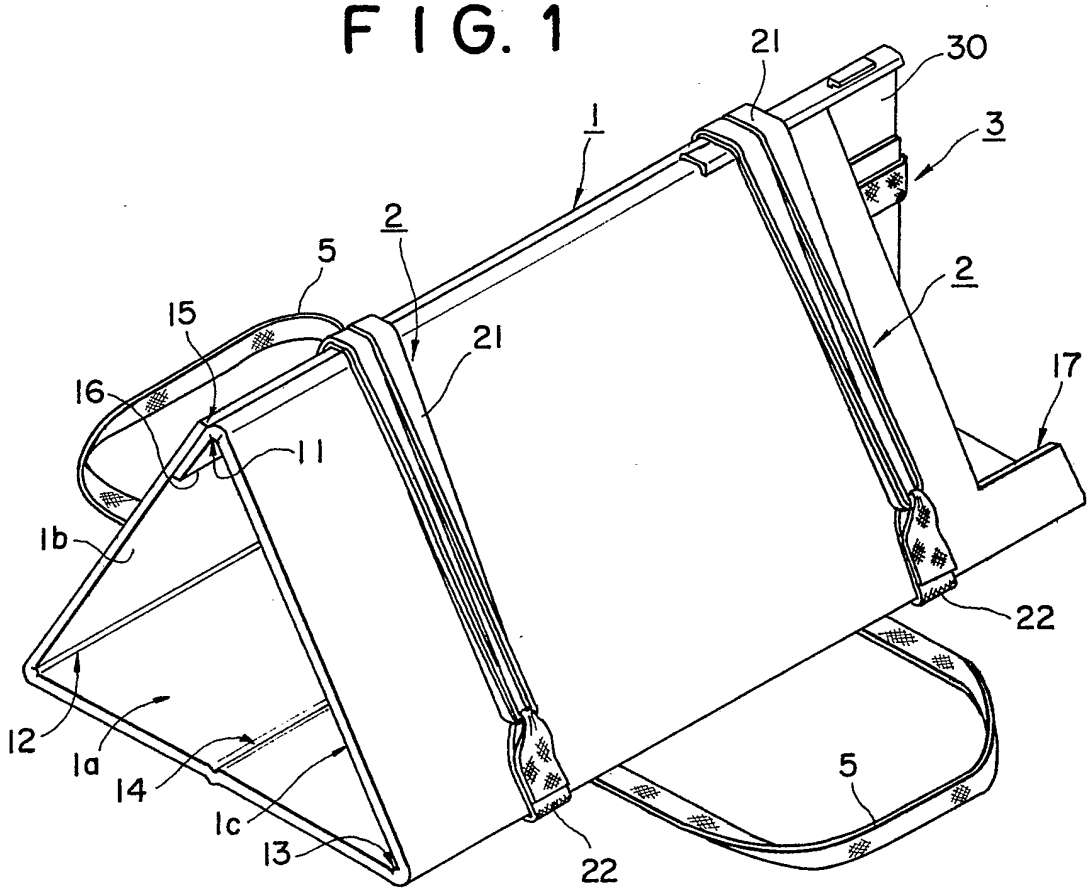
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FIG. 3

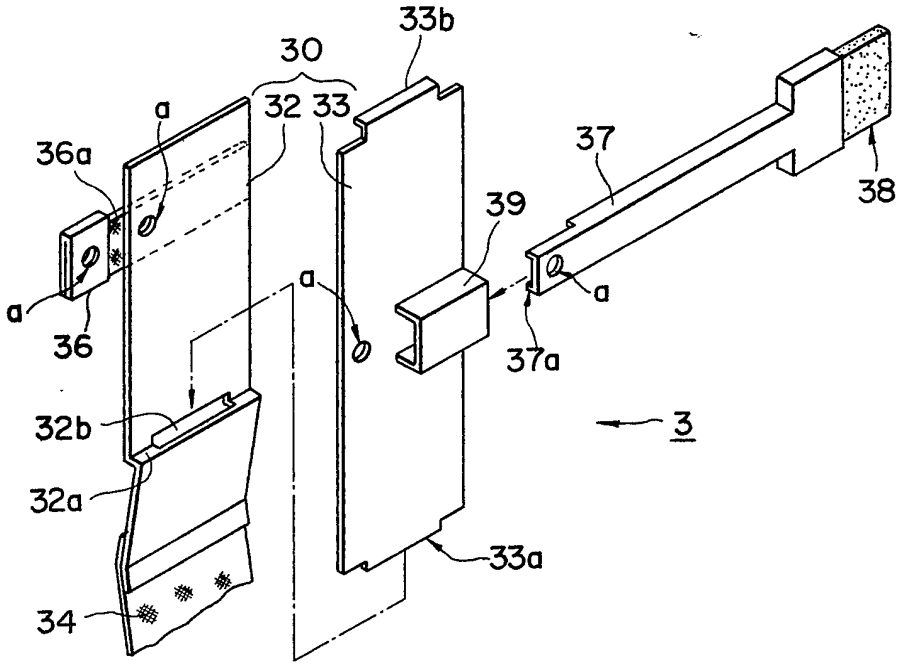
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FIG. 2

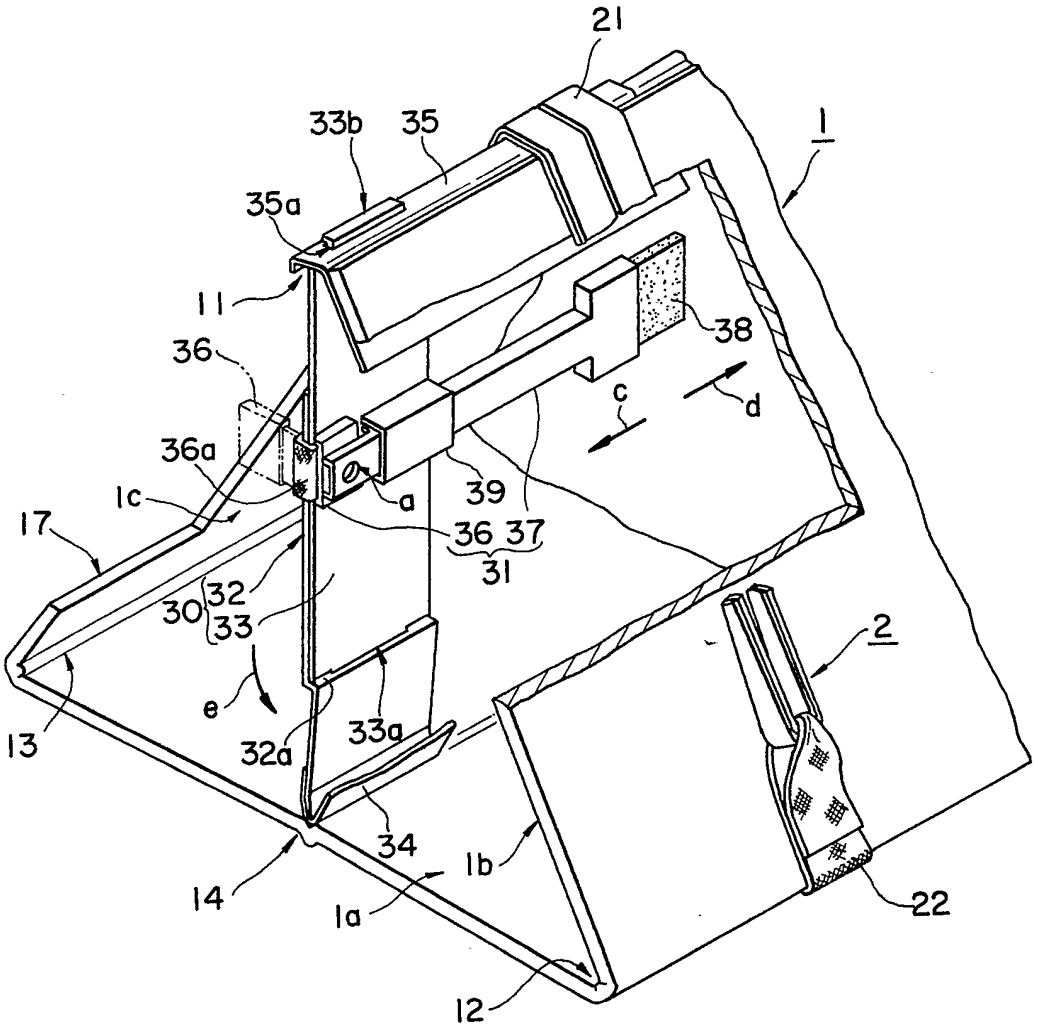

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FIG. 4

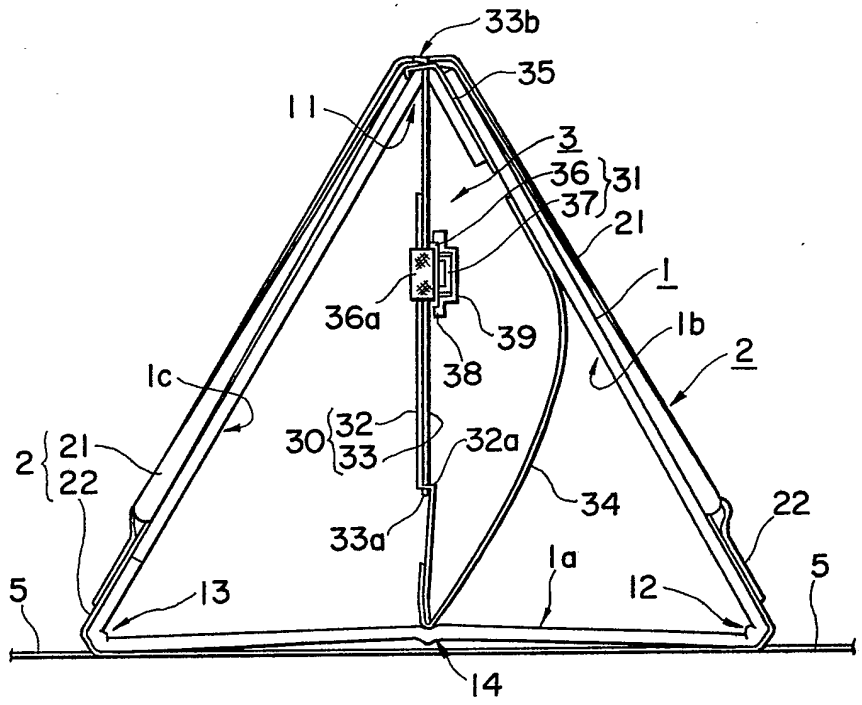

FIG. 5

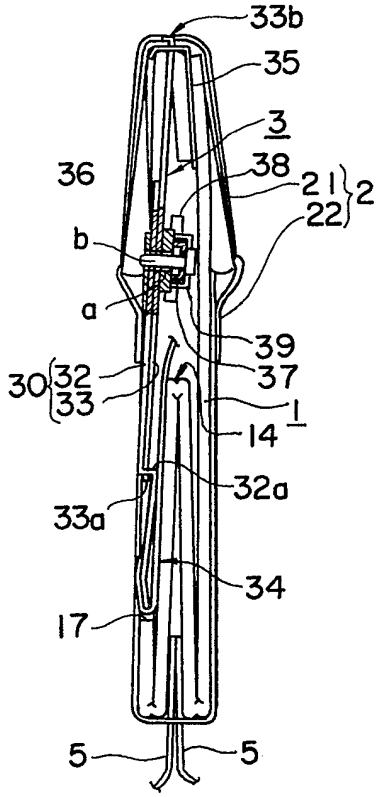

FIG. 6

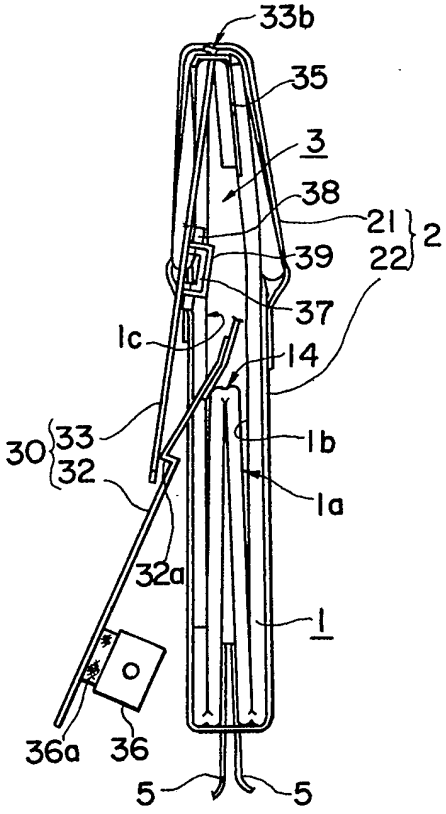

FIG. 7

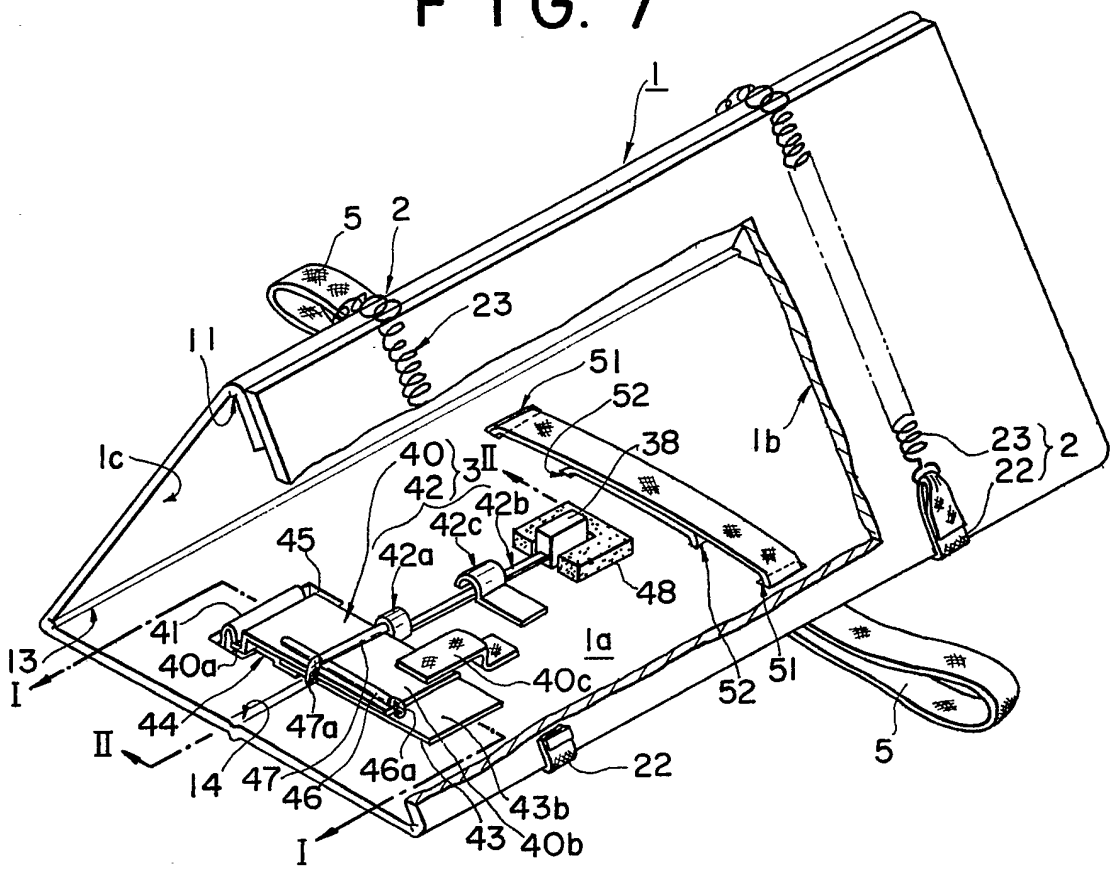

FIG. 8

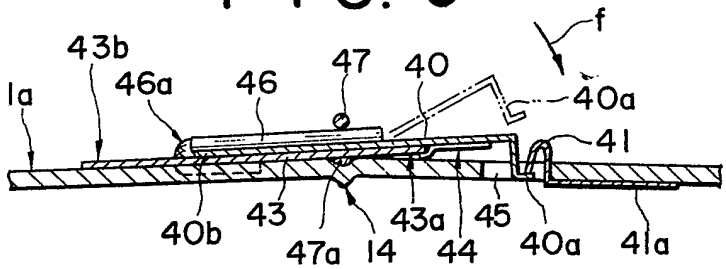

FIG. 9

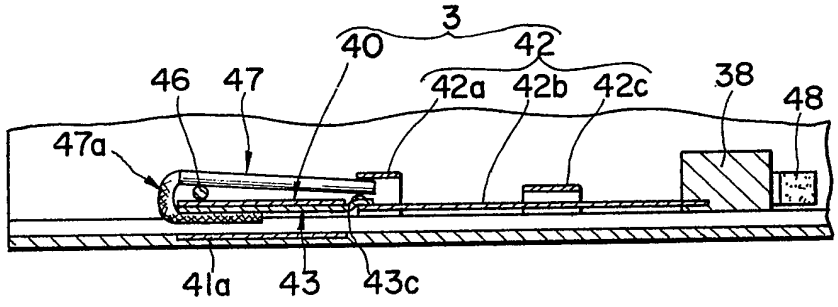

FIG. 10

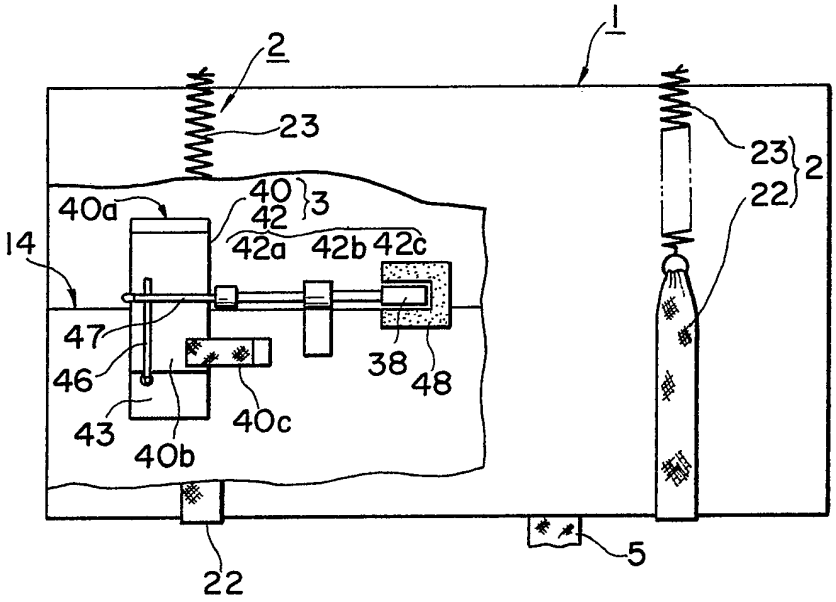
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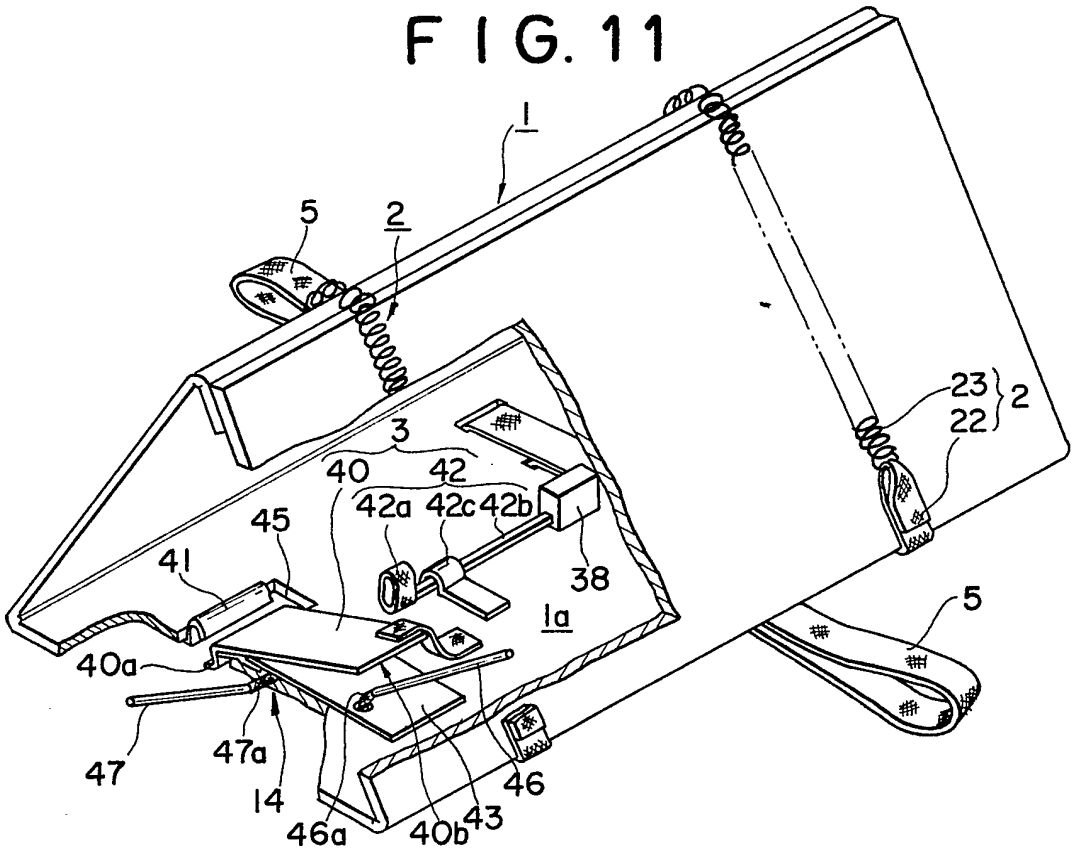
FIG. 11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40b
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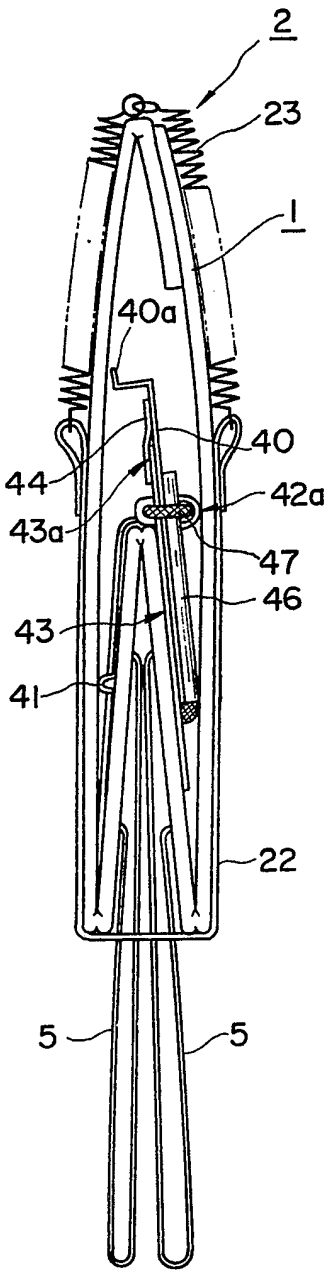
FIG. 12



SPECIFICATION

Mousetrap

BACKGROUND OF THE INVENTION

Field of the Invention:

This invention relates to a mousetrap, and more particularly to a so-called press-to-death type of mousetrap in which a hollow trap body constituting the mousetrap is operated to be folded into a generally flat configuration by a resilient member mounted thereon when a mouse is caught to be pressed to death in the trap body.

Description of the Prior Art:

Some press-to-death types of mousetraps in the prior art have been proposed in which an approximately square tubular trap using metal plates and hinge pins for effecting hinge action at each corner is provided with springs for giving normally the elastic force to the side surfaces of the trap body to fold them into overlapping flat configuration and a trapping mechanism for maintaining said trap body in the square tubular configuration against said elastic force of the springs, said trapping mechanism being interlocked with a certain movement of a mouse entering said trap body (for example, movement of the mouse pulling a bait) to be unlocked so that said trap body is operatively folded to press the mouse to death within the trap body.

While the press-to-death type of mousetrap in said prior art has advantages in that the caught mouse does not need to be further manually killed and can be caught by a relatively compact trap, it has the following disadvantages.

SUMMARY OF THE INVENTION

One of the disadvantages lies in that because of the square tubular configuration the elastic force of the spring in operation acts the most weakly on a portion of the trap body which is expected to press the most hard the mouse within the trap body, i.e. the central portion of the trap body folded flat so that the elastic force cannot be effectively applied to the purpose of pressing the mouse to death. Also, the second disadvantage lies in that the mouse may not die for some time after it is caught due to the ineffective action of elastic force applied to the trap body. To ensure the sure death of mouse, the mousetrap must use strong springs. Namely, when the strong springs are used, strong physical strength is needed for setting up the mousetrap (for setting up it in three dimensions) so that the setting-up is made difficult.

An object of the present invention is to provise a press-to-death type of mousetrap in which elastic force applied to a trap body acts very effectively on a mouse within the trap body.

Another object of the present invention is to provide a mousetrap in which the elastic force applied to the trap body acts more uniformly on each portion of the trap body so that it can press the press to death wherever the mouse may be within the trap body.

Still another object of the present invention is to provide a mousetrap which can press a mouse to death with elastic force as weak as possible and thereby trap the mouse simply without needing any strong physical strength.

Other objects and features of the present invention will be disclosed sequentially in the detailed description of the present invention.

The aforementioned and other objects of the present invention are to provide a mousetrap provided with a tubular trap body constituted to be folded into a generally flat configuration, elastic members for applying elastic force to the trap body and folding it into the flat configuration and a trapping mechanism for holding said trap body in the tubular configuration against the elastic force of said elastic members so that said trap body is operatively folded into the flat configuration by releasing said trapping mechanism, characterized in that said trap body is formed into an approximately equilateral triangular or isosceles triangular tubular configuration, one side surface of the equilateral triangular tubular trap body or bottom side surface of the isosceles triangular tubular trap body except for equilateral side surfaces being formed with a fold bisecting approximately the side surface along the axis of the trap body to be operatively folded between the other two side surfaces about said fold.

Brief Description of the Drawings:

Figure 1 is a perspective view showing a mousetrap according to the present invention under the trapping condition as viewed from the inlet side.

Figure 2 is an enlarged fragmentary partly cutaway perspective view of a trapping mechanism of the mousetrap shown in Fig. 1.

Figure 3 is a perspective view showing disassembled principal portions of the trapping mechanism shown in Fig. 2.

Figure 4 is an enlarged rear elevation showing the trapping condition of the mousetrap shown in Fig. 1.

Figure 5 is an enlarged partly cutaway rear elevation of the mousetrap shown in Fig. 1 under the untrapping condition.

Figure 6 is an enlarged rear elevation of the released trapping mechanism of the mousetrap shown in Fig. 1.

Figure 7 is a partly cutaway perspective view of a mousetrap in another embodiment as viewed from the back under the trapping condition.

Figure 8 is an enlarged sectional view of the mousetrap taken along the line I-I of Fig. 7.

Figure 9 is an enlarged sectional view of the mousetrap taken along the line II-II of Fig. 7.

Figure 10 is a partly cutaway side view showing the untrapping condition of the mousetrap shown in Fig. 7.

Figure 11 is a partly cutaway perspective of the trapping mechanism of the mousetrap shown in Fig. 7 in the instant that it is released.

Figure 12 is an enlarged rear elevation of the mousetrap shown in Fig. 7 under the untrapping condition.

DESCRIPTION OF THE PREFERRED EMBODIMENT

(Example 1)

Fig. 1–6 show a first embodiment of the mousetrap according to the present invention. A trap body 1 constituting a part of the mousetrap is formed by bending a corrugated carboad or similar one having a predetermined cut size and sticking both ends 15,16 to each other to form a generally equilateral triangular tube. The respective corners 11,12,13 of this tube are flexible, and one side surface 1a of the equilateral triangular tubular trap body 1 is formed with a fold 14 bisecting approximately the side surface longitudinally of the trap body. The side surface 1a having the fold 14 is constituted to be folded as a whole into a flat configuration shown in Fig. 5 and 6 under the condition that it is folded between the other two side surfaces 1b,1c about said fold 14.

Instead of being formed into said equilateral triangular tubular configuration, the trap body 1 may be formed into a generally isoscelese triangular one and a side surface except for the equilateral side surfaces may be formed with a fold corresponding to said one 14.

On said trap body 1 are respectively mounted elastic members 2,2 for normally applying elastic force to fold the trap body 1 into said flat configuration, string-like handles 5,5 for pulling said trap body 1 into a solid configuration (tubular configuration) when said trap body is folded and a trapping mechanism 3 for maintaining said trap body 1 under the tubular trapping condition against the elastic force of said elastic members 2,2.

Said respective elastic member 2 are ring-like assemblies of a proper number of ring-like rubber strings 21 having sufficient elasticity and different diameters and non-expansible strings 22 like cloth tapes. Said non-expansible strings 22 are wound around said trap body 1 to contact the outer surfaces of said two corners 12, 13 for reducing friction between the outer surfaces of two corners 12, 13 and the elastic members.

In Fig. 1–6 showing the first preferred embodiment, the trapping mechanism 3 is constituted from a strut 30 erected between said fold 14 and the corner portion 11 opposed thereto at one end of the trap body 1 to maintain the trap body 1 in the tubular configuration and constituted to be folded sideways upon receiving elastic force of said elastic members 2, 2 and a releasing means 31 located in a position to sandwich a proper portion of the strut 30 for preventing the strut 30 from being folded and constituted to be interlocked with a certain movement of a mouse entering said trap body 1 to be displaced from said located position.

As is apparent from Fig. 2–6, said strut 30 is constituted from a first rectangular plate 32 and a second rectangular plate 33 deviating longitudinally from and overlapping this plate 32. While a projection 33a of the lower end of the second plate 33 engages a slit 32b formed in the first plate 32, it is stopped by a shoulder 32a at the side surface of said first plate 32 so that the whole is constituted to be folded leftwards in Fig.2 and 4 about said stopping portion (the shoulder 32a at the first plate 32) of said both plates 32, 33 by the elastic force of said elastic member 2. Further, while a hook-shaped projection 33b formed on the top of second plate 33 engages a slit 35a in a reinforcing plate 35 secured fixedly to an end of the corner 11 of the trap body 1, the upper end of the strut 30 is connected to said corner 11, and the lower end of the strut 30 is anchored to the inner wall of the trap body 1 in the opposite direction to that of folding the strut 30 by a guide tape 34 having a sufficient length to somewhat slack when the strut 30 is erected as aforementioned.

Said releasing means 31 is provided with a lever 36 mounted pivotably on the upper end of the first plate 32 of said strut 30 through a non-expansible string 36a attached thereto and a sensor piece 37 mounted slidably on the side surface of said second plate 33 while loosely fitted removably into a gate-shaped guide 39 secured fixedly to the side surface of the second plate 33 of strut 30 and having a portion extending to the interior of the trap body 1 and mounting a bait 38 which a mouse likes. As apparent from Fig. 2 and 4, the lever 36 is located to cooperate with said non-expansible string 36a for sandwiching the overlapping portion of the first and second plates 32, 33 of the strut 30 so that the strut 30 is prevented from the collapse by the end 37a of the sensor piece 37. The sensor piece 37 is interlocked with the movement of a mouse entering the trap body 1 and pulling or pushing the bait 38 to be displaced so that the lever 36 is displaced from a position shown by the solid line to a position shown by the alternate long and two short dash line in Fig. 2.

To prevent the strut 30 from the release by the lever 36 and the sensor piece 37 constituting the releasing means 31 mainly in transportation or the like and enable the mouse-

trap to be more simply trapped, pin holes *a* and a pin *b* are provided for means for fixing at any time both lever 36 and sensor piece 37 constiuting the releasing means 31 to the strut 30 while said releasing means 31 is located as above mentioned, the pin holes *a* being provided in the first and second plates 32, 33, lever 36 and sensor piece 37 to align with each other and the pin *b* being inserted into the pin holes *a*.

The end of side surface 1c of the trap body 1 at the trapping mechanism 3 side is provided with a cutout 17 so that the strut 30 is not hindered by the side surface 1c when it collapses.

Before trapping, said mousetrap is folded as shown in Fig. 5 such that the bottom side surface 1a of the trap body 1 is folded flat about the fold 14 between the other side surfaces 1b, 1c, and the trapping mechanism 3 is located such that the releasing means 31 sandwiches a proper portion of the strut 30 to prevent the strut 30 from the collapse with the pin *b* being inserted fixedly into the pin holes *a*.

The mousetrap under the condition shown in Fig. 5 can be extremely simply set to the trapping condition by pulling simultaneously the handles 5, 5 toward either side. Namely when the mousetrap under the condition shown in Fig. 5 is turned upside down and the handles 5, 5 are pulled toward either side, the trap body 1 is formed into a solid triangular tube against the elastic force of the elastic member 2 and at the same time the free end of the strut 30 is conducted on the fold 14 on the side surface 1a of the trap body 1 by the guide tape 34 so that the strut 30 is erected betwen the corner 11 of the trap body 1 and the fold 14 against the elastic force of the elastic member 2. Then the pin *b* is withdrawn from the pin holes a and the trap body 1 is set to the trapping condition shown in Fig. 1, 2 and 4.

Under the above-mentioned condition, when a mouse entering the trap body 1 contacts the bait 38 to move the sensor piece 37 in the direction of arrow *c* or *d* in Fig. 2, the lever 36 is displaced as shown by the alternate long and two short dash line in Fig. 2 to be disengaged from the strut 30. At the same time, the first plate 32 of strut 30 pivots in the direction of arrow *e* in Fig. 2 about the shoulder 32a by the elastic force of the elastic member 2 to fold the strut sideways so that the trap body 1 is operatively folded flat as shown in Fig. 6. By such operation the mouse is caught within the trap body 1 to be pressed to death by the fastening of the elastic member 2.

The mouse pressed to death may be abandoned or incinerated together with the trap body 1. When the trap body 1 is reused, however, the trap body 1 is again set into the solid configuration by pulling the handles 5, 5 toward each side and only the mouse is incinerated.

(Example 2)

Fig. 7–12 show another embodiment of the mousetrap in which the trap body 1 is constituted approximately similarly to that of said first embodiment and the elastic member 2 is a ring-shaped member consisting of a non-expansible string 22 and two coil springs 23, 23 and attached to the trap body 1 in the same way as the first embodiment. Also, the handle 5 is constituted from an endlessly formed cloth tape inserted through slits 51, 51 and 52, 52 formed in the side surface 1a of the trap body 1.

The trapping mechanism in this embodiment is constituted not to hinder the view field and passage of a mouse entering the trap body 1. The trapping mechanism is disposed to be approximately orthogonal to the fold 14 on the side surface 1a at an end of the trap body 1, and an end 40a of a lever 40 is stopped by a stopper 41 secured fixedly to said side surface 1a. The trapping mechanism is constituted from the lever 40 mounted to pivot like a seesaw about a predetermined position between the stopper 41 and the fold 14 and a releasing means 42 located in a position to press the other end 40b of the lever 40 to said side surface 1a of the trap body 1 against the elastic force of the elastic member 2 and interlocked with a certain movement of a mouse entering the trap body 1 to be displaced from said located position.

On the side surface 1a of the trap body 1 is adhesively mounted a reinforcing plate 43 of thin metal plate orthogonal to the fold 14 in one end 43b. Said lever 40 of similar thin metal plate is arranged to overlap the reinforcing plate 43 with its end 40a protruding farther than the other end 43a of the reinforcing plate 43 toward said stopper 41 and sticked to the end 43a of the reinforcing plate 43 with a adhesive cloth tape 44 to pivot like a seesaw about the end 43a of said reinforcing plate 43.

The stopper 41 for stopping the L-shaped end 40a of the lever 40, as shown in Fig. 8, is formed such that an end of a resilent thin metal plate 41a attached to the outer surface of the trap body 1 is extended through a hole 45 provided the side surface 1a of the trap body 1 into the inside thereof and then bent into an inverted V or U-shaped configuration to form the end slanting steeply toward said fold 14 whereby the L-shaped end 40a of the lever 40 can be smoothly guided until it is stopped by the stopper 41 when said end 40a is depressed from above in Fig. 8 in the direction of arrow *f* to set the mousetrap to the trapping condition.

The releasing means 42 is constituted from a sensor lever 42b held axially slidably by a guide 42c fixed along the central portion of

the side surface 1a of the trap body 1, an annular grip 42a formed at an end of the sensor lever 42b and a bait 38 mounted on the other end of the sensor lever 42b.

An end 40b of the lever 40 is held on the side surface 1a of the trap body 1 by a lever 46 mounted pivotably on the side surface 1a through a string 46a at the base end, and further the end of the lever 46 is held similarly on the side surface 1a by a lever 47 mounted pivotably on the side surface 1a through a string 47a at the base end. As shown in Fig. 9, the end of said lever 47 and a projection 43c formed integrally with said reinforcing plate 43 on its side edge are gripped by said annular grip 42a of the releasing means 42 so that the end 40b of the lever 40 is constituted to be pressed against the side surface 1a of the trap body 1 indirectly by the releasing means 42.

Under the condition that the releasing means 42 is located as mentioned above, i.e. the grip 42a of the releasing means 42 grips the end of the lever 47 and the projection 43c and the lever 40 is pressed against the side surface 1a, a holder 48 made of sponge or the like to surround supportably said bait 38 is mounted readily removably and partially adhesively on the side surface 1a for a means to fix at any time said releasing means 42 to said side surface 1a to prevent the grip 42a of the releasing means 42 from being freely disengaged from the lever 47 and the projection 43c.

A cloth tape 40c anckors the end 40b of the lever 40 to the side surface 1a of the trap body 1 to prevent the lever 40 from excessive inversion in trapping operation which will be described later.

This mousetrap in the second embodiment is folded flat as shown in Fig. 10 and 12 until it is formed into the trapping configuration. When it is set to that configuration, the trap body 1 is turned upside down from the condition shown in Fig. 7 and the handles 5, 5 are pulled left and right by both hands to set up the trap body 1 to a solid triangular tube. In the process of setting up the trap body 1 to the triangular tube, the L-shaped end 40a of the lever 40 approaches the stopper 41 as shown by the alternate long and two short dash line in Fig.8, then slides on the inverted V-shaped surface of the stopper 41 and is stopped by the stopper 41. Then, as shown in Fig. 7, the trap body 1 maintains the triangular tubular configuration against the elastic force of the elastic member 2. In the condition shown in Fig. 7, the holder 48 is removed from the side surface 1a of the trap body 1 and the trap body 1 is placed on a passage of mouses to provide a complete trapping condition.

As shown in Fig. 11, when a mouse entering the trap body 1 pulls the bait 38 in the direction of arrow *g* in the drawing, the releasing means 42 is displaced to release the lever 47 and the projection 43c from the grip 42a and thereby the end 40a of the lever 40 is disengaged from the stopper 41 to release the trapping mechanism 3 so that the side surface 1a of the trap body 1 is operatively folded on the other side surface 1b,1c about the fold 14 by the elastic force of the elastic member 2 to press the mouse to death within the trap body 1.

As apparent from the above description, the trapping mechanism shown in Fig. 7 to 12 is free from any hindrances to hinder the passage of mouses within the trap body 1 and has an advantage in that even mouses having strong wariness particularly about the front hinderance tend psychologically to enter the trap body 1. Also, the elastic force of the elastic member 2 applied to the releasing means 42 under the trapping condition is extremely reduced by the three-lever structure of levers 40,46 and 47 so that the trapping mechanism can be operated by a slight force.

As is understood by the above description, the mousetrap according to the present invention, compared with the prior press-to-death type of mousetrap which sandwiches a mouse only from both sides, is operated such that the respective corners 11,12 and 13 of the triangular tubular trap body 1 provide all acute angles and the mouse is sandwiched not only by two side surfaces 1b,1c, but also by the corner angle 11 and fold 14. Hence, the elastic force of the elastic member 2 acts the most effecitvely on the mouse within the trap body 1 and more uniformly on each portion of the trap body 1. Also, consequently, mouses can be caught and killed by less elastic force without needing strong physical strength in trapping the mousetrap.

For material of the trap body 1 is preferable said cardboard in dry districts since it should be made as economically as possible when it is abandoned or incinerated after catching a mouse. In wet districts, moisture-proof cardboard, synthetic resin plate, etc. are preferable. Also, when the mousetrap is used repeatedly, preferably metal plates are properly cut off and connected to each other by the use of four hinge pins to consitute a triangular tube-shaped mousetrap with one side surface capable of being folded between the other ones, for elongating the life of mousetrap.

Also, it is preferable to use a dry bait artificially prepared to have flavor which mouses like particularly.

CLAIMS

1. A mousetrap comprising a tubular trap body constituted to be folded into an generally flat configuration, elastic members for applying elastic force to fold the trap body into the flat configuration and a trapping mechanism for maintaining said trap body under trapping tubular condition against the

elastic force of said elastic members, said trap body being operated to be folded into the flat configuration by releasing the trapping mechanism, characterized in that said trap body is formed into an approximately equilateral or isosceles triangular tube or one side surface except for two equilateral ones of isosceles triangular tube being formed with a fold approximately bisecting the side surface axially to be operatively folded between the other two side surfaces about said fold.

2. A mousetrap as defined in claim 1, comprising handles for pulling said trap body to set up it into a solid configuration from flat folded one.

3. A mousetrap as defined in claim 1, wherein said elastic members are a proper number of annular members wound around said trap body and consisting of a non-expansible string and a proper number of rubber strings or coil springs.

4. A mousetrap as defined in claim 2, comprising a trapping mechanism provided with a strut constituted to be erected at an end of said trap body between said fold and the corner opposed the fold to maintain said trap body in a tubular configuration and folded toward at least one side by the elastic force of said elastic member and a releasing means constituted to be located in a position that it sandwiches a proper portion of the strut to prevent the strut from being folded and interlocked with a certain movement of a mouse entering said trap body to be displaced from said located position.

5. A mousetrap as deficed in claim 4, wherein the strut is connected on one end to the corner opposed to said fold of the trap body and anckered on the other end to the inner wall of the trap body at the opposite side to the folding direction of the strut through a guide tape having a sufficient length to somewhat slack when the strut is erected, and said releasing means is provided with a means for fixing at any time the releasing means to said strut while said releasing means is located in said position.

6. A mousetrap as defined in claim 2, having a trapping mechanism comprising a lever located approximately orthogonally to said fold at an end of said trap body and having one end stopped by a stopper secured fixedly to the side surface of the trap body formed with said fold to pivot like a seesaw about any position between the stopper and said fold and a releasing means constituted to be located in a position that the lever is pressed on the other end against said side surface of the trap body against the elastic force of the elastic member and interlocked with a certain movement of a mouse entering said trap body to be dispalaced from said located position.

7. A mousetrap as defined in claim 6, having said stopper constituted from an elastic metal plate slanting steeply at one end toward the fold on the side surface of said body and a means for fixing at any time said releasing means to said side surface of the trap body under said located position.

8. A mousetrap as defined in claim 5 or 7 having the trap body formed of corrugated cardboard, other cardboards or synthetic resion plate.

9. A mousetrap substantially as hereinbefore described with reference to the accompanying drawings.

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ASSIGNEE-INFORMATION:

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YOKOYAMA YOSHIMASA	N/A

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PRIORITY-DATA: JP04784481A (March 31, 1981)

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EUR-CL (EPC): A01M023/16 , A01M023/22

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ABSTRACT:

A mousetrap comprising a tubular trap body (1) constituted to be folded into an generally flat configuration, elastic members (2) for applying elastic force to fold the trap body into the flat configuration and a trapping mechanism (3) for maintaining the trap body (1) under trapping tubular condition against the elastic force of the elastic members (2), the trap body (1) being

operated to be folded into the flat configuration by releasing the trapping mechanism (3). The trap body (1) is formed into an approximately equilateral or isosceles triangular tube, one (1a) of side surfaces of the equilateral triangular tube or one side surface except for two equilateral ones of isosceles triangular tube being formed with a fold (14) approximately bisecting the side surface (1a) axially to be operatively folded between the other two surfaces about the fold (14). □